

## CLAIMS

1           1. (canceled)

1           2. (previously presented) The method of claim 19, wherein the piezoelectric film is  
2 composed of aluminum nitride or zinc oxide.

1           3. (previously presented) The method of claim 19, wherein the patterned electrode is  
2 composed of aluminum or titanium.

1           4. (previously presented) The method of claim 19, wherein the substrate is composed of  
2 silicon or gallium arsenide.

1           5. (canceled)

1           6. (previously presented) The method of claim 19, wherein the non-conducting layer is  
2 planarized by chemical mechanical polishing.

1           7-8. (canceled)

2           9. (previously presented) The method of claim 19, wherein the second layer is a  
3 non-conducting layer that has a low dielectric constant.

1           10. (previously presented) The method of claim 19, wherein the second layer is SiO<sub>2</sub>.

1           11-18. (canceled)

1           19. (currently amended) A method of forming a thin film acoustic device, the method  
2 comprising the steps of:

3           forming a base electrode;

4           forming a second electrode;

5           forming a piezoelectric film between the base electrode and the second electrode to enable  
6 application of an electric field to the piezoelectric film, wherein the foregoing is accomplished by:

7           providing a substrate;

8                   depositing and patterning a first conductive layer to define the base electrode with an  
9                   edge region having a first height relative to the substrate; and

10                  placing a second layer of material over the substrate with a portion positioned along the  
11                  edge region of the base electrode, said portion having a height relative to the substrate so as to eliminate  
12                  or substantially reduce a step along the base electrode edge region relative to the first height, wherein the  
13                  second layer of material is formed by:

14                  depositing a ~~non-conductive~~ non-conducting layer after patterning the first conductive layer; and

15                  planarizing the non-conducting layer by chemical mechanical polishing, polymer planarization,  
16                  or polymer reflow with liftoff.

1                 20. (previously presented) The method of claim 19, wherein the step of forming the  
2                 piezoelectric film includes depositing the piezoelectric film on the patterned electrode and the second  
3                 layer.

1                 21. (previously presented) The method of claim 19, wherein the piezoelectric film serves as  
2                 a support membrane for the device.

1                 22. (previously presented) A method of forming a thin film acoustic device, comprising:  
2                 forming a base electrode on a substrate;  
3                 patterning the base electrode;  
4                 depositing a non-conducting layer on the patterned base electrode and substrate;  
5                 planarizing the non-conducting layer by chemical mechanical polishing, polymer planarization,  
6                 or polymer reflow with liftoff so that the non-conducting layer and patterned base electrode form a  
7                 continuous layer having a level surface;  
8                 forming a piezoelectric layer on the level surface of the continuous layer; and  
9                 forming a second electrode so that the piezoelectric layer is positioned between the base  
10                 electrode and the second electrode to enable application of an electric field to the piezoelectric film.

1                 23. (previously presented) The method of claim 22, wherein the level surface provided by  
2                 the planarized non-conducting layer and patterned electrode improves the mechanical integrity of the  
3                 piezoelectric layer by eliminating the edge of the patterned electrode.

1                 24. (canceled)

1           25. (canceled)

1           26. (previously presented) The method of claim 19, wherein the non-conducting layer is  
2 planarized by polymer reflow with liftoff.

1           27. (currently amended) The method of claim 19, wherein the base electrode is formed by:  
2           applying the first conductive layer of ~~electrode material~~ on the substrate;  
3           applying and patterning non-electrode material over the first conductive layer of ~~electrode~~  
4 ~~material~~ to form an etch mask;  
5           etching the first conductive layer ~~electrode material~~ to form the base electrode under the non-  
6 electrode material;  
7           applying the ~~second layer~~ of non-conducting layer ~~material~~ over the non-electrode material and  
8 adjacent to the base electrode; and  
9           removing the non-conducting layer ~~material~~ over the non-electrode material and removing the  
10 non-electrode material, leaving the non-conducting layer ~~material~~ adjacent to the base electrode.

1           28. (previously presented) The method of claim 22, wherein the non-conducting layer is  
2 planarized by chemical mechanical polishing.

1           29. (previously presented) The method of claim 22, wherein the non-conducting layer is  
2 planarized by polymer reflow with liftoff.

1           30. (previously presented) The method of claim 22, wherein the continuous layer is formed  
2 by:  
3           applying a layer of electrode material on the substrate;  
4           applying and patterning a layer of non-electrode material over the layer of electrode material to  
5 form an etch mask;  
6           etching the electrode material to form the base electrode under the non-electrode material;  
7           applying non-conducting material over the non-electrode material and adjacent to the base  
8 electrode; and  
9           removing the non-conducting material over the non-electrode material and the non-electrode  
10 material, leaving the non-conducting material adjacent to the base electrode.

1           31. (previously presented) The method of claim 30, wherein:

2           the non-electrode material is a polymer material; and  
3           the non-conducting material over the polymer material and the polymer material are removed by  
4           immersion in a liquid polymer solvent to lift off the non-conducting material over the polymer material.

1           32.       (previously presented) The method of claim 30, wherein:  
2           the electrode material is etched using an isotropic process to create the base electrode having an  
3           undercut profile under the non-electrode material; and  
4           the non-electrode material over the base electrode is reflowed after creating the base electrode  
5           having the undercut profile to retract the non-electrode material towards the edge of the electrode.

1           33.       (previously presented) The method of claim 32, wherein:  
2           the non-electrode material is a polymer material; and  
3           the non-conducting material over the polymer material and the polymer material are removed by  
4           immersion in a liquid polymer solvent to lift off the non-conducting material over the polymer material.